



JOB SAFETY ANALYSIS

**Instructor's
Manual**



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**For use with videotape,
film or slideshow version**

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SECTION I - A: GETTING JOB SAFETY ANALYSIS (JSA) STARTED

Before starting a JSA training program, organizations must have top management support. They need to know that it not only helps reduce employee accidents, but it also can save them time and money by having fewer accidents and less interruptions in business. And, a JSA training program teaches everyone how to do their jobs the right way, the safe way and the only way. The details of the hows', whys', whats', etc. of JSA are described on the following pages.

It is important to note, that this JSA program involves everyones support in order for it to be successful. The safety professional can manage it, guide it, but doesn't have the ultimate responsibility for its success. The support and direction from key people in the organization will determine its outcome.

JSA's can be effectively incorporated into the organization's existing Safety Program. These materials fit well into Safety Meetings, Quality Control issues, Joint Safety & Health Committees, etc. There is no end as to how JSA's can be used to bring safety into the forefront of your organization. Read the following information to get a better understanding of how a JSA training program works.

SECTION I - B: BACKGROUND ON JSA/PREPARING FOR INSTRUCTION

Accidents Mean Losses

It's no secret that accidents mean losses – losses to both the employer and the employee. Those losses include both human losses and dollar losses. Can the losses be stopped? Yes, they can, and the best way to do it is to develop a solid, working program for preventing accidents and occupational illness. That program is the one you are preparing to conduct. It's called Job Safety Analysis, and it has been proven time and again to be the most effective basic accident and occupational illness prevention tool in many industries.

What is Job Safety Analysis?

Job Safety Analysis, also known as JSA, is a simple procedure for preventing work accidents and illnesses. JSA does this effectively because it operates at a very basic level – a specific individual job or work assignment. A Job Safety Analysis is a review of job practice methods, uncovers hazards and develops recommended safe job procedures.

Why JSA Is Important?

Job Safety Analysis can make a given job as safe as humanly possible. How can it do this? By finding hazards and eliminating or minimizing those hazards before the job is performed, and before they have a chance to become accidents. Job Safety Analysis can help develop procedures to train employees to work properly so they can prevent accidents to themselves and their co-workers. They are also taught how to cope with physical and environmental hazards that can't be eliminated.

The development and use of JSA's is of critical importance to any company or organization that's committed to reducing and preventing accidents and illnesses on the job.

How to Use a JSA

Training Tool

A JSA is an especially helpful training tool. The program provides an organized and regular system for training new employees and retraining existing employees. A completed JSA form can be used in Job Instruction Training (JIT). Once a JSA is established, training and retraining is easier, because the entire job procedure does not have to be redeveloped every time. With the JSA as a guide, you don't have to worry about whether you've forgotten to explain some part of the procedure – maybe an important part – to the employee.

Training Documentation

The JSA gives a basis for documentation of employee training. This is especially useful when a supervisor is making periodic safety contacts with the workers. The supervisor can observe a worker and use the JSA to show how to do the job correctly. If a worker has gotten into the habit of doing a job or part of a job wrong, the JSA can show the worker exactly how he or she has deviated from the original training, and how to get back on the right track.

Teaching the Supervisor

There may be jobs in a supervisor's area of responsibility that he or she hasn't actually performed. If that's the case, the supervisor can use the JSA as a self-teaching device. Because the JSA spells out what is involved in a job step by step, a supervisor can learn in detail about each of the individual jobs he or she supervises.

Accident Investigation

The JSA is uniquely important in accident investigation. If an accident should occur, the JSA is available to use as a reference point. By comparing what the worker actually did to the recommended job action as written on the JSA, a determination can be made if the worker was in fact performing the job properly. When using the JSA for this purpose, there are a couple of questions which must be asked: Was the JSA itself correct? Were any of the hazards which led to the accident in question overlooked when the JSA was originally developed? Has the work environment changed?

Machinery Inspection

The JSA helps in machinery inspection, too. It provides a detailed breakdown. It's easier to see how the machinery actually works in the performance of a given job. That can be a great help in evaluating the performance of the machiner itself.

Health Hazards

The JSA can be an effective means of uncovering *health* hazards in a job operation.

The job procedure could be contributing to a medical problem that might not become know for a long time.

These health problems are not as visible or as dramatic as accidents because they usually don't happen all of a sudden. Nevertheless, they are extremely costly to the company and a serious detriment to employee health.

Many health hazards have to be assessed through measurements by an industrial hygienist or other qualified individual.

Ergonomics

Ergonomics is the science of designing the job and the workplace to fit the worker. The goal of ergonomics is to allow work to be done without undue stress.

The JSA will identify worker position(s), tool usage, loads, lifting, repetitive motion, etc., that quite likely affect the employee's job and performance.

If the relationship between the employee and the job induces stress, a more detail analysis should be performed, to better identify these existing and/or potential problems.

What Jobs need JSA?

The long-range objective for JSA's should be to develop them for all jobs. However, it is very important to set priorities for developing JSA's, especially when beginning a JSA program. In deciding which job to start with, here are some factors to consider:

- 1) Job accident frequency: Those jobs that have resulted in many accidents, injuries or occupational illness. The higher the frequency rate accidents, the greater the reason for the JSA.
- 2) Job injury and occupational illness severity: Those jobs that have involved disabling injuries or occupational illnesses (lost work or restricted work) over those with only minor injuries. If a number of serious injuries have occurred, there is probably a basic problem with the environment or how the job is being done.
- 3) Potential injury/illness severity: Those with the potential for serious injury/illness or death – even if no such accidents have happened yet.
- 4) New jobs: These have no accident history and the potential for accidents and/or occupational illness may not yet be recognized. The JSA discovers potential hazards, eliminates hazards, and establishes safe job procedures before any accidents can occur.
- 5) Cost per accident: Typically 20% of the accidents cause 80% of the accident costs. Consider studying the 20% of high cost accidents.
- 6) Other factors, such as age, sex, experience of employees on the job; working alone; government regulated positions; key/critical positions in an operation.

JSA Is an Ongoing Activity

It's important for you to remember that JSA is not a one-time activity—it's a permanent working tool. Because it's a continuing activity or program, you have

to keep your JSA's current. What can happen if you don't keep them current? Well, many of the advantages we have talked about – uncovering hazards, employee training, accident investigation and record keeping – can be lost over a period of time, and the misinformation of an out-of-date JSA can work to everybody's disadvantage.

Keeping JSA's up to date may sound like a lot of extra work, but realistically speaking, it's not. Changes are not actually needed that often. But you are going to have to be on top of things. If a situation, a job environment or any other change occurs, the change must be reflected on the JSA as quickly as possible. If the JSA is revised, everyone concerned with the job should be informed of the changes and instructed in the new procedures.

When to Update

When should you review a JSA for possible updating? If an accident occurs on a job covered by a JSA, that JSA should always be reviewed. Check the JSA to see if the accident occurred because the JSA was not followed, or if the accident occurred because there was something basically wrong with the job procedure or the analysis, or if a hazard existed that had not previously been recognized or eliminated. As noted before, the JSA should also be updated whenever the job method, equipment, tools, or the process have changed.

Every job in your organization shares something with all other jobs in that organization. They all require people performing at their best level of productivity, producing goods and services in a safe and efficient manner, with maximum economic benefits returned to management and employees alike. Helping do that is what JSA is all about.

Where Should JSA's be Kept?

A copy of the JSA should be kept on the job so it will be handy for ready reference. They should also be maintained in the supervisor's office and may be posted on department bulletin boards.

Computerization Training Needs

You may wish to put the JSA into a computer bank, so that recall can be quick, in the same way that other information is kept.

The JSA: An Important Safety Factor

JSA's will help reduce accidents and occupational illnesses and increase efficiency. They result in cost reductions, may help find a better way to do a job, and serve to document employee training. They are important tools in the overall safety program.

SECTION I - C: CONDUCTING A TRAINING SESSION

The JSA Training Program

This instructor's manual is part of a Job Safety Analysis training program. The program includes an accompanying videotape, film or slide show. In this section of the Instructor's Manual, we will discuss the importance of the JSA program, outline the videotape/film/slide show content, and provide you with guidelines for conducting a JSA development training session.

The Manual

This manual is your teaching guide for the Job Safety Analysis program. It provides a detailed lesson plan for the classroom session and explains how to organize the entire program.

This manual lists the materials you'll need, and explains how to set up the classroom. It provides tips on keeping participants involved. It explains how to tailor the discussion to the needs of the participants by drawing on their experiences and considering their special problems.

What's in the Videotape/Film/Slide Show

The audio-visual program (video, film or slide show) which accompanies this manual explains how a JSA is developed, and allows the participants time to complete two JSA's.

The basic steps in making a Job Safety Analysis are discussed:

1. Breaking down a selected job into a sequence of steps.
2. Finding and identifying the hazards contained in each job step.
3. Recommending safe job procedures and/or ways to eliminate unsafe conditions.

The program then shows a specific job and develops a JSA for that job. The audio visual program discusses the first two steps in developing the JSA in detail. You, as the instructor, are responsible for discussing the third step with the workshop participants.

After completion of the first "Loader" JSA, a second job "Bander" is shown, and participants are asked to complete JSA's entirely on their own. Provision is made for the program to be turned off at this point, so the JSA's can be completed and then discussed by the group.

Additional points discussed in the program are:

- Where JSA's should be kept,
- The various uses of JSA's (new employee training, hazard awareness, retraining, accident and occupational illness investigation),
- Pitfalls to avoid when doing JSA's,
- The need for JSA's to be a continuing program,
- Priorities in developing JSA's.

Your Job as an Instructor

The most important assets of an instructor are a knowledge of the subject and the ability to teach and communicate. The procedures given in this Instructor's Manual will help you present your material in a clear and concise manner.

How to Use Your Instructor's Guide

The Instructor's Guide is a lesson plan for the workshop session. Because it's so important for you to be thoroughly prepared for the workshop session, the plan begins with a section on preparation. It tells you what to read in advance and how to prepare the participants for the session. Be sure to review this entire manual before conducting the workshop. Review the audio-visual. Section Two of this manual is for your use during the actual session. It is divided into two columns. The first is headed, "Visual Aid"; the second is headed, "What to Say."

The "Visual Aid" column lists the topics to be discussed. It recommends the use of flip charts, chalk board or overhead projector—however, they should be used at your own discretion.

The "What to Say" narrative column includes actual discussion material. You should be thoroughly familiar with the content, but you should use your own words.

This column also indicates when to show the videotape, film or slide show, and alerts you to specific discussion questions that appear in the other column.

Equipment

If you are using a videotape, you will need the proper equipment for playback. If you are using the film, you will need equipment for projecting 16mm sound film. If you are using the slide show, you will need equipment for projecting 2" x 2" slides and a cassette player for playing the accompanying audio tapes.

The tape cassette for the slide show can be used with either manual or automatic equipment. One side of the cassette has an audible tone for indicating when the

slide is to be changed manually, and the label is so marked. The other side has inaudible signals that automatically advance the slides when used with equipment have this capability.

The best way to be sure your slides are arranged correctly and are not reversed or upside down is to make a test run.

Try out all the equipment before class begins.

Seating

A U-shaped seating arrangement or a classroom seating with tables are recommended to enhance participation in the discussions.

Handouts

Completed handouts for "Loader" & "Bander" should be given to participants at the completion of each groups activities of each JSA. Copy the completed JSAs in this manual for the student.

Workshop Size

You should limit the size of the group to 20, so everyone

can participate easily. If the total group is larger than 20, break it down into several smaller subgroups. Participation by all class members is essential to the success of this workshop. During each workshop, you may wish to break the group into several individual teams to complete the JSA forms at the proper time. This, of course, is an alternative approach to individual completion of the JSA's.

Workshop Schedule

The workshop session is designed to last about two hours. However, if there is a great deal of discussion, more time may be needed.

Who Should Attend the Session?

1. All supervisors who will be responsible for developing JSA's.
2. All others in the organization who will provide substantial input in developing JSA (particularly applicable if the conference method of development is used).

SECTION II: INSTRUCTORS' PRESENTATION

This section contains the recommended class procedure for conducting the actual workshop session.

*Use overhead projector, chalkboard, flip chart and/or hand outs for your visual aids.

SECTION II - A: INTRODUCTION

*VISUAL AIDS

WHAT TO SAY (NARRATIVE)

(Introduce yourself, giving a brief background. Then, have students introduce themselves.)

Course Objectives

The objective of this workshop is to enable you to develop a good Job Safety Analysis or JSA as part of the over all accident prevention program.

The JSA helps make any given job as safe as possible by finding hazards and eliminating or minimizing them. The JSA is one of the most effective basic tools in accident prevention available to us.

The JSA has other uses besides accident prevention, such as job instruction training...inspections...accident investigation and analysis...safety contacts...and as a reference for documentation.

Job Instruction Training

JSA's may be used for training new employees and retraining existing employees. The entire job procedure is contained in the JSA, so it doesn't have to be re-established every time the need for training or retraining arises.

Inspections

The JSA can also help in the inspection of machinery. Because the JSA breaks a given job down step by step, it's easy to see how the machine is involved in the job function.

JSA's can be valuable in accident investigation, too. Suppose an accident does happen. There are some questions the JSA can help you answer – Was there a JSA for that job? Was the worker doing the job using the recommended job actions in a JSA? By comparing what the worker actually does to what the JSA says to do, you can determine if the worker was performing the job properly or other reasons for accident.

Any accident investigation should include an evaluation of the JSA itself, to be sure it's correct, and also to be sure all the hazards have been found and appropriate action taken.

Safety Contact

The JSA helps you when you are observing a worker doing his or her job. You can use the JSA to show how to do the job right.

Documentation

The JSA is a useful record of how an employee was trained. If a worker has gotten into the habit of doing a job or part of a job wrong, the JSA can show the worker exactly how he or she has deviated from the original training, and how to get back on the right track.

Cost Reduction

The JSA can also improve your operation by reducing costs. Here's how that happens...

VISUAL AIDS

Cost Reduction (con't)

WHAT TO SAY (NARRATIVE)

First of all, the employee receives more efficient training when the JSA is used as a training tool. The employee can also be brought up to the point of full proficiency much sooner.

Second, the development and use of the JSA results in fewer accidents, injuries and illnesses. That reduces both direct and indirect costs associated with those accidents, injuries and illnesses – costs like lost work time and machinery down time, administrative costs, and time spent in accident investigation and personnel replacement.

In this workshop, we will cover the principles of Job Safety Analysis, and you'll learn how to develop a JSA. We'll see an audiovisual (videotape film, slide show) which explains the JSA and shows examples of two common industrial jobs. You'll get a chance to actually make out a JSA of your own.

Before we look at the audio-visual program, there are some things we should discuss. First of all, there are three terms that you will be using when making out a JSA, and it's important for you to know exactly what they mean.

Those terms are: hazard...accident...and injury. They each have a very specific meaning.

Hazard

What is a **hazard**? A hazard is a potential danger. For example, oil spilled on the floor is a hazard. As long as that oil spill is there, it's a hazard or a potential danger.

Accident

As soon as you put people in the picture, that hazard is very likely to contribute to an accident. An **accident** is an unintended happening that may result in injury, loss or damage.

If someone slips on that oil, that's an accident.

Injury

Then what's an **injury**? An injury is the result of an accident. A sprained wrist or a broken arm from the fall would be an injury. Remember, though, that an accident can happen without anyone being injured.

Let's take another example: A hammer balanced on a windowsill is a hazard. Knocking the hammer off the sill is an accident. If it hits your foot and breaks it...that's an injury.

Health Hazards

Remember that hazards to safety are not all you are going to uncover. The JSA can also be a means of finding the health hazards in a job operation.

The job procedure could be contributing to a medical problem that might not become known for a long time. Problems such as deterioration of the lower back, loss of hearing or loss of sight, or an occupational disease from exposure to chemical fumes, dust and mist can result from job procedures and environments. These health problems may not be as apparent as safety problems are. For example, it's easy to see that a guard is missing from a machine, but you might not notice fumes or dust. Nevertheless, when those health problems do exist, they can be a

VISUAL AIDS

Health Hazards (Con't)

WHAT TO SAY (NARRATIVE)

detriment to the health of the employees and extremely costly to the company.

The establishment of a good JSA program may help uncover these problems well before they become serious health hazards.

Many health hazards can only be assessed through measurements made by a qualified person such as an Industrial Hygienist. If a health hazard does exist, it's important to know the exact nature of the hazard, so appropriate steps can be taken to eliminate or control it.

Ergonomics

The interaction of an employee with tools, procedures and activities can be stressful. If the problem is too in depth, (to be solved with a JSA) further analysis and professional guidance will be needed.

SECTION II - B: JSA FOR LOADER

VISUAL AIDS

WHAT TO SAY (NARRATIVE)

Now let's see the (videotape, film or slide show). During this presentation you'll see a simple, basic job being done. It will be repeated several times. You will be talked through the development of the first two steps of a JSA on the basic job. Then another job will be shown, and you'll be asked to complete a JSA on your own.

NOTE: (Following the breakdown of the explanation of possible hazards for step 1 of the job shown, the screen goes "to black" in the tape and film. Turn off the audio-visual equipment and tell the participants to list the possible hazards for job steps 2, 3 and 4. The narrator tells you that the videotape, film, or slide show is to be stopped at this point.)

Job Steps

Now that you've seen the first job of a "Loader," let's talk about how you should break down a job into steps. Each of the steps should accomplish some major task. That task will consist of a set of movements. We are not breaking it down into individual arm and hand movements, the way we would if we were doing a time-motion study.

Look at the first set of movements used to perform a task, and then determine the next logical set of movements.

Step #1 Load

For example, in the job you just saw, the *worker picks up the boxes and loads them on the truck*. Everything related to this one logical set of movements is a job step in the JSA.

Step #2 Transport

What's the next logical set of movements? The *worker pushes the loaded truck* to the storeroom. Everything related to this logical set of movements is the second job step in the JSA.

Step #3 Stack

Removing the boxes from the truck and *placing them on the shelf* is another logical set of movements...and is the third job step in the JSA.

Step #4 Return

Finally the worker *returns the empty truck* to the receiving area. That's a logical set of movements, and the fourth and last job step in the JSA.

The (videotape, film or slide show) showed the hazards for job step 1. Now take a few minutes to identify the hazards for job steps 2, 3 and 4 and write them on your JSA form.

Total Environment

NOTE: (Give participants about 10 minutes to write down possible hazards for steps 2, 3, and 4. Also, break into 4 to 5 people teams and share ideas with each other.)

It's not enough to look at the obvious hazards. It's also important to look at the entire environment in which the person is working and look for every conceivable hazard that might exist.

1a. For example, you saw a pallet leaning against the wall. The worker was also coming back on the wrong side of the aisle. Those *hazards* were obvious. But what if the pallet hadn't been there? Well, in that case, you would still have had a possible hazard...because somebody could come

VISUAL AIDS

Total Environment (con't)

WHAT TO SAY (NARRATIVE)

along and put a pallet or some other object there in the aisle. That might seem like nitpicking, but it's not. You know as well as I do, that's exactly the kind of thing that does happen, time and again – so it's important for you to visualize those possible hazards.

Let's take another example – the V-belt on the end of the conveyor. The worker in the videotape film or slide show was not working near the V-belt at the end of the conveyor, but he could have been. The hazard does not have to be at the exact spot the person is working.

Recommended Actions:

1a. Lifting Techniques

1a. Possible *actions* include using proper lifting techniques such as, grasping the bottom of the box with one hand on the bottom front corner and the other hand on the top opposite corner of the other end. The elbows should be kept close to the sides and the lifter's body should be turned instead of twisted.

1b. Wear Gloves

1b. To protect against splinters, the worker should wear gloves.

1c. Wear Safety Shoes

1c. To protect against heavy boxes, poor grip and improper shoes.

1d. Guard V-belt

1d. The unguarded V-belt should be guarded with an enclosure.

1e. Truck parked away from body

1e. The truck should be parked far enough away from the body so the worker doesn't have to twist.

1f. Check area

1f. The area around the worker should be checked to see if objects are on the floor that might cause slips and trips.

2a. Lighten load

2a. For job step *two*, the load on the trucks should be kept to a weight a typical worker can handle using this type of equipment. Otherwise, powered equipment should be used, or the worker should get help to move the truck.

2b. Hands on end of truck

2b. Hands should be kept on the end of the truck, not on the sides.

2c. Push truck

2c. The truck should always be pushed – never pulled.

2d. Stack boxes orderly

2d. Boxes should be stacked in an orderly manner, and no higher than eye level.

2e. Look for objects

2e. The worker should look for objects on the floor which could cause slips or trips.

2f. Keep to right

2f. The worker should keep to the right of the aisle when approaching other people.

2g. Check escape routes

2g. The worker should also check escape routes to prevent being caught between the truck and fixed objects.

3a. Safe Lifting

3a. Job step *three* recommended actions include the safe lifting practices we've already described.

VISUAL AIDS

3b. Truck in front of worker

3c. Wear Gloves

4. Hand placement

WHAT TO SAY (NARRATIVE)

3b. The truck should be parked in front of the worker. The worker should lift the box off the truck and turn—not twist—90 degrees to place it in the rack.

3c. The worker should wear gloves and watch hand placement.

4. For the *fourth* job step, the recommendations are basically the same as for step two, except that a load is not present.

You've seen the basic *actions* that can be taken to correct a condition or a *hazard*—engineering the hazard out...providing guards...and providing personal protective equipment.

There are other kinds of actions that can be taken besides those basic ones, but they don't always occur in every situation. What other actions or procedures do you think could be taken?

Ask for participant discussion or continue with presentation.

Training the worker

As noted earlier, you can correct some hazards or prevent some hazards from becoming accidents by training the worker.

Do the job in a different way

Another way to correct a hazardous condition is to do the job in a different way.

Reduce the frequency of the job

Or you can reduce the frequency with which the job is performed.

Change the environment

You can change the environment by removing hazardous materials or opening up a crowded work space, for example.

Eliminate the job

You can eliminate the job completely. That may sound a little drastic, but very often it can be done without any loss of production. For example, instead of manufacturing the components of a major assembly, have them made by a specialized subcontractor and receive them already finished. That would remove the job from your operation.

Specialists

You might want to consider getting specialists to perform that one operation or procedure. However, a JSA would still be needed.

NOTE: (The videotape, film or slide show lists three basic actions: engineer out, provide guards, provide personal protective equipment. Although providing a guard is one type of engineering control, it was listed separately because it is so important. You may wish to list it separately in your presentation as well, and note its importance.)

Now hand out completed "Loader" JSA to each participant and make comparisons with their own.

SECTION II - C: JSA FOR BANDER

VISUAL AIDS

WHAT TO SAY (NARRATIVE)

Now we're going to see another job. Watch closely, because you will be asked to complete the entire JSA for the job of a Bander, banding pallets.

(Turn on the videotape, film, or slide show and continue the audiovisual program.)

Next, let's look at the hazards and actions for each step.

Cart too close to pallet

1. The possible *hazards*? Cart positioned too close to the pallet so the operator could strike body and legs against the cart or pallet...dropping the strapping gun on a foot.

Leave ample space
Grasp gun firmly

1. A recommended *action* would be to leave ample space between the cart and pallet to feed the strapping...and have a firm grip on the strapping gun.

Sharp strapping edges
Sharp pallet edges

2. Possible *hazards* include the sharp edges of the strapping, and the sharp edges of the pallet.

Hazard

Some of you may have put "cuts from the metal strap" as a *hazard* for this job step. Let's review the distinction between a hazard, accident and injury, and you'll see why this answer is not correct. A hazard is a potential danger—in this case it's the sharp edges of the strapping which could cause a cut.

Accident

An *accident* is an unintended happening that may result in an injury—in this case, it would be the cuts to the arm and the hands. It's very important to discover the hazard, because if you just think about the injury accident or *injury*, you might not understand the full scope of the problem, and may fail to take the appropriate recommended action.

Injury

Wear gloves, eye protection,
long sleeves, safety shoes

2. Appropriate *actions* include wearing gloves, eye protection, long sleeves and safety shoes.

Keep firm grip on strapping

2. The worker should keep a firm grip on the strapping—holding the end between the thumb and forefinger.

Watch where stepping

2. The worker should also watch where he or she is stepping.

Sharp corners on pallet
Improper cart placement

3. Possible *hazards* are projecting sharp corners on the pallet, and improper placement of the cart.

Clear path
Pulling smoothly

3. Recommended *actions* are: making sure there is a clear path between the pallet and the cart, and pulling smoothly to avoid jerking the strapping.

Splinters on pallet
Sharp strap edges

4. What are the possible *hazards*? There are two—splinters on the pallet and sharp strap edges.

Wear gloves, eye protection,
and long sleeves

4. The recommended *actions* are wearing gloves, eye protection and long sleeves...

VISUAL AIDS

Point strap in direction of bond
Pull smoothly

Protruding corners
Splinters

Wear safety shoes
Assure clear path
Watch where walking

Springing and sharp strapping

Firm grasp on strap and gun
Clip positioned properly

Loose strap end improperly
clamped

Clips in gun
Hold strap down

WHAT TO SAY (NARRATIVE)

4. Pointing the strap in the direction of the bond...and pulling the strap smoothly to avoid jerks.

5. The possible *hazards* are protruding corners on the pallet and splinters.

5. The recommended *actions* are for the worker to wear safety shoes, assure a clear path, watch where he or she is walking, and face in the direction he or she is walking.

6. The possible *hazards* are springing and the sharp edges of the strapping.

6. The recommended *actions* are keeping a firm grasp on the strap and gun, and making sure the clip is positioned properly.

7. The possible *hazard* is a loose strap end improperly clamped.

7. The recommended *procedures (actions)* are to make sure there are clips in the gun before operating the gun to clamp...and to hold the strap down with the free hand.

8. Step 8 is a repetition of steps 1-7.

We've completed the JSA for the Bander.

SECTION II - D: SUMMARY

VISUAL AIDS

WHAT TO SAY (NARRATIVE)

We've just completed the JSA for the Bander.

8. Step 8 is a repetition of steps 1-7.

Possible Hazards

You'll notice that on both the completed JSA's in your manual, accidents and/or possible injuries are included in parentheses following the possible hazards. Some people find it easier to identify these possible accidents and injuries along with the possible hazards. However, the major emphasis is on the possible hazards, not accidents.

As we mentioned earlier, if you focus on the accident or injury, you may not understand the full scope of the problem—which is the possible hazard—and you may fail to take the appropriate action.

Now we'll return to the audio-visual program which will discuss where completed JSA's should be kept, possible pitfalls, the need for Job Safety Analysis to be an ongoing program, and setting JSA priorities.

NOTE: (Start the tape, film or slide show on and complete the audio-visual program, and at the end of the program, turn off the equipment.)

Remember to go back to the program and compare the hazards you've identified with those identified in the program.

There are three basic actions that are usually taken first to correct a hazard:

- engineering the hazard out
- providing guards
- providing personal protective equipment.

Engineer Out Provide personal protective equipment

Equally important are:

- Job instruction training
- Good housekeeping
- Good ergonomics. One example is that means the person should be positioned in relation to the machine or other elements in the environment in such a way as to eliminate stresses and strains.

There are a few additional concepts which need to be explained.

Maintenance jobs

One additional point should be made concerning priorities. This involves maintenance jobs. It may be impractical to develop JSA's for all the hundreds—or thousands—of different maintenance tasks. But priorities for JSA's should be established for:

Repetitive maintenance

- repetitive maintenance jobs like changing a crane cable,

Basic tool usage

- basic tool and equipment usage jobs, like using a cutting torch,

VISUAL AIDS

Extremely hazardous or
history of accidents

WHAT TO SAY (NARRATIVE)

– and infrequently performed maintenance jobs that are extremely hazardous or have a history of accidents.

This completes this section of our workshop. If there are any questions, I'll be happy to discuss them.

(Answer any questions.)

(Make the closing remarks.)

Remember – JSA's can reduce accidents and illnesses and increase efficiency. There are also a number of other specific benefits.

In many cases, you will find a new and better way to do a job.

As supervisors, you are very likely to learn more about the jobs you supervise.

And when operators are involved in making JSA's, they tend to be just a little more safety conscious.

JSA's can also result in cost reductions. Fewer accidents and injuries mean less employee time lost, less machinery down time, and fewer administrative and investigative costs.

You may wish to tailor this section to the specific requirements of your organization.

In other words, properly used JSA's can be valuable tools in our safety program. But remember, when you start the program, pick out the jobs that are giving you the most problems. Start with just one or two jobs and then expand.

And don't just file the forms and forget about them – use them for training, safety contacts, and in all the other ways we've discussed. If they just sit in a file, they're not going to be of much value.

And finally, don't expect miracles. A JSA program is not going to change your operation overnight – but if used properly, the JSA program should soon make your employees work better and safer.

(Now hand out completed "Bander" JSA to each participant and make comparisons with their own.)

SECTION II - E: PROGRAM OPTIONS

VISUAL AIDS

Blank JSA work sheet
sheet in workbooks

Quiz in back of workbook

WHAT TO SAY

1. If additional training/review is required, tell participants the exact date and time of the next meeting. Tell participants about the quiz and/or select JSA to be given at the next session.
2. Select one job you supervise and complete a JSA for that job. When you've completed your JSA's, we'll meet again to discuss them.
3. Ask participants to complete the quiz at the end of their program workbooks and review quiz answers with participants.

SECTION III - A: QUIZ

Please photocopy quiz and answer sheet to meet the needs of your classes.

1. List the three major steps in completing the JSA.

- (a) _____
(b) _____
(c) _____

2. Identify each of the following phrases as either an:

(a) accident

(b) hazard

(c) injury

Place the correct letter in the space provided before each phrase:

_____ fall on the floor

_____ blind corner

_____ nip point on rolls

_____ strained shoulder

_____ sprained ankle

_____ low overhead

_____ cut finger

_____ cracked ladder

_____ caught in gears

_____ fractured finger

3. Name four priorities for developing JSA's.

4. A JSA assists in which of the following? (More than one response may be correct.)

(a) employee training

(d) accident investigation

(b) identifying hazards

(e) machinery inspection

(c) eliminating all hazards so that
no accidents will occur

(f) documents training which can
lead to corrective action.

5. What maintenance jobs generally should be included in the JSA program?

(a) all maintenance jobs

(b) basic tool jobs, repetitive jobs and hazardous jobs

(c) only those which are hazardous

(d) repetitive jobs and hazardous jobs

(e) only those done every day

SECTION III - A: QUIZ

Mark the following statements true or false:

- ___ 6. Job Safety Analysis is a one-time function.
- ___ 7. The first step in doing any JSA is to look for possible injuries.
- ___ 8. JSA's are useful in documenting employee training.
- ___ 9. The last step in development of the JSA is recommending safe job procedures.
- ___ 10. Listing too many hazards is one pitfall in developing a JSA.
- ___ 11. A basic job step is a logical series of movement on-the-job.
- ___ 12. The more accidents on a specific job, the greater the need for the JSA.
- ___ 13. After hazards have been identified on the JSA form, the next most important step is to list all the personal protective equipment for the job.
- ___ 14. The words "be careful" would be a good way to start writing a recommended action.
- ___ 15. Jobs steps should begin with an action word; (i.e. lift, push, pull).

16. List three possible pitfalls in JSA development:

- (a) _____
- (b) _____
- (c) _____

17. List three general approaches to consider for recommended action:

- (a) _____
- (b) _____
- (c) _____

18. What is the best benefit from a JSA program?

SECTION III - B: QUIZ ANSWERS

Please photocopy quiz and answer sheet to meet the needs of your classes.

1. List the three major steps in completing the JSA.

(a) Break job into sequence of steps.

(b) Identify potential hazards.

(c) Recommend safe job action or procedure

2. Identify each of the following phrases as either an:

(a) accident

(b) hazard

(c) injury

Place the correct letter in the space provided before each phrase:

a fall on the floor

b blind corner

b nip point on rolls

c strained shoulder

c sprained ankle

b low overhead

c cut finger

b cracked ladder

a caught in gears

c fractured finger

3. Name four priorities for developing JSA's.

New jobs

High Accident frequency jobs

Infrequent jobs

Severe disabling injury/illness jobs

4. A JSA assists in which of the following? (More than one response *may* be correct.)

X (a) employee training

X (d) accident investigation

X (b) identifying hazards

X (e) machinery inspection

(c) eliminating all hazards
so that no accidents
will occur

X (f) documents training which can lead
to corrective action

5. What maintenance jobs generally should be included in the JSA program?

(a) *all* maintenance jobs

X (b) basic tool jobs, repetitive jobs and hazardous jobs

(c) only those which are hazardous

(d) repetitive jobs and hazards jobs

(e) only those done every day

SECTION III - B: QUIZ ANSWERS

Mark the following statements true or false:

- F 6. Job Safety Analysis is a one-time function.
- F 7. The first step in doing any JSA is to look for possible injuries.
- T 8. JSA's are useful in documenting employee training.
- T 9. The last step in development of the JSA is recommending safe job procedures.
- T 10. Listing too many hazards is one pitfall in developing a JSA.
- T 11. A basic job step is a logical series of movement on-the-job.
- T 12. The more accidents on a specific job, the greater the need or the JSA.
- F 13. After hazards have been identified on the JSA form, the next most important step is to list all the personal protective equipment for the job.
- F 14. The words "be careful" would be a good way to start writing a recommended action.
- T 15. Jobs steps should begin with an action word; (i.e. lift, push, pull).

16. List three possible pitfalls in JSA development:

- (a) Not listing all the hazards
- (b) No action tales or hazards
- (c) Listing non-specific actions

17. List three general approaches to consider for recommended action:

- (a) Engineering
- (b) Provide Guards
- (c) Personal Protective Equipment

18. What is the best benefit from a JSA program?

(let students list them in order of their priorities)



National Safety Council JOB SAFETY ANALYSIS

INSTRUCTIONS ON REVERSE SIDE

JOB TITLE (and number if applicable):

STOCK LOADING

PAGE 1 OF 4

JSA NO. 103

DATE:

1-1-95

☒ REWISED
☐ REWISED

TITLE OF PERSON WHO DOES JOB:

LOADER

SUPERVISOR:

JAMES SMITH

ANALYSIS BY:

JAMES SMITH

COMPANY/ORGANIZATION:

METAL FABRICATING CORP.

PLANT/LOCATION:

CHICAGO

DEPARTMENT:

PACKAGING

REVIEWED BY:

JOHN MARTIN

REQUIRED AND/OR RECOMMENDED
PERSONAL PROTECTIVE EQUIPMENT:

GLOVES, SAFETY SHOES, SAFETY GLASSES, HARD HATS

APPROVED BY:

Joe Bottan

SEQUENCE OF BASIC JOB STEPS

POTENTIAL HAZARDS

RECOMMENDED ACTION OR PROCEDURE

1. REMOVE BOX FROM
CONVEYOR AND PLACE
ON TRUCK.

1a. HEAVY BOXES & IMPROPER
HAND PLACEMENT OR
HANDLING METHOD.
(MASHED FINGERS, HIT
ELBOWS, STRAINS)

1a. USE PALMAR GRIP, GRASP BOTTOM
WITH ONE HAND ON BOTTOM FRONT
CORNER AND OTHER HAND ON TOP
OPPOSITE CORNER OF OTHER END. KEEP
ONE ELBOW INTO SIDE. TURN BODY
INSTEAD OF TWISTING.

1b. SPLINTERS (PUNCTURES)

1b. WEAR GLOVES.

1c. HEAVY BOXES, POOR GRIP,
& IMPROPER SHOES.
(FOOT INJURIES)

1c. WEAR HARD TOE SHOES.

1d. UNGUARDED V-BELT
(HAND INJURIES)

1d. GUARD V-BELT WITH ENCLOSURE
AND KEEP IN PLACE.

1e. TRUCK PARKED TOO CLOSE OR
TOO FAR FROM WORK AREA.
(STRAINS, BOXES DROPPED ON
FEET. SLIPS/TRIPS/FALLS)

1e. PARK TRUCK AT A DISTANCE AWAY
FROM THE BODY SO THAT YOU ARE NOT
REQUIRED TO TWIST THE BODY AND SO
THAT YOU HAVE ENOUGH WORKING
ROOM TO AVOID BUMPING INTO THE
CONVEYOR OR TRUCK.



National Safety Council JOB SAFETY ANALYSIS

INSTRUCTIONS ON REVERSE SIDE

JOB TITLE (and number if applicable):

STOCK LOADING

PAGE 2 OF 4 JSA NO. 103

DATE:

1-1-95

☒ NEW
☐ REVISED

TITLE OF PERSON WHO DOES JOB:

LOADER

SUPERVISOR:

JAMES SMITH

ANALYSIS BY:

JAMES SMITH

COMPANY/ORGANIZATION:

METAL FABRICATING CORP.

PLANT/LOCATION:

CHICAGO

DEPARTMENT:

PACKAGING

REVIEWED BY:

JOHN MARTIN

REQUIRED AND/OR RECOMMENDED
PERSONAL PROTECTIVE EQUIPMENT:

GLOVES, SAFETY SHOES, SAFETY GLASSES, HARD HATS

APPROVED BY:

Joe Bortan

SEQUENCE OF BASIC JOB STEPS

POTENTIAL HAZARDS

RECOMMENDED ACTION OR PROCEDURE

CONT'D FROM PAGE 1.

1f. OBJECTS ON FLOOR.
(SLIPS/TRIPS/FALLS)

1f. OBSERVE AREA FOR SLIPPING
AND TRIPPING HAZARDS.

2. PUSH LOADED TRUCK
TO STORAGE AREA.

2a. OVERLOADED TRUCK &
WORN GASTERS (STRAINS
WHILE PUSHING)

2a. IF TRUCK WILL NOT MOVE BY
USING BODY WEIGHT AGAINST IT,
GET POWERED EQUIPMENT, REMOVE
PART OF LOAD, OR SECURE ASSISTANCE.

2b. HANDS ON SIDE OF TRUCK.
(MASHED HANDS)

2b. KEEP HANDS ON END OF TRUCK.

2c. PULLING TRUCK. (RUN
OVER FOOT)

2c. PUSH, NEVER PULL.


2d. BOXES STACKED TOO HIGH
& UNBALANCED. (FOOT
INJURIES.)

2d. STACK BOXES ORDERLY & NO
HIGHER THAN NORMAL EYE LEVEL.

2e. OBJECTS ON FLOOR.
(SLIPS/TRIPS/FALLS)

2e. OBSERVE FOR SLIPPING/TRIPPING
HAZARD WHEN TRAVELLING.

[illegible]

 National Safety Council JOB SAFETY ANALYSIS		JOB TITLE (and number if applicable): STOCK LOADING		PAGE <u>4</u> OF <u>4</u> JSA NO. <u>103</u>	DATE: <u>1-1-95</u>	<input checked="" type="checkbox"/> NEW <input type="checkbox"/> REVISED
INSTRUCTIONS ON REVERSE SIDE		TITLE OF PERSON WHO DOES JOB: LOADER		SUPERVISOR: JAMES SMITH	ANALYSIS BY: JAMES SMITH	
COMPANY/ORGANIZATION: METAL FABRICATING CORP.		PLANT/LOCATION: CHICAGO		DEPARTMENT: PACKAGING	REVIEWED BY: JOHN MARTIN	
REQUIRED AND/OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT: GLOVES, SAFETY SHOES, SAFETY GLASSES, HARD HATS		APPROVED BY: <i>Joe Bottan</i>				
SEQUENCE OF BASIC JOB STEPS		POTENTIAL HAZARDS	RECOMMENDED ACTION OR PROCEDURE			
CONT'D FROM PAGE 3.		3b. TRUCK PARKED TOO CLOSE	3b. PARK TRUCK IN FRONT OF YOU WITH			
		OR TOO FAR FROM WORK	RACK TO RIGHT OR LEFT. LIFT BOX			
		AREA (STRAINS, BOXES	OFF TRUCK, TURN 90° TO PLACE			
		DROPPED ON FEET, SLIPS/	ON RACK. (THIS PLACEMENT REQUIRES			
		TRIPS/ FALLS)	LEAST MOVEMENT & LOWERS POTENTIAL			
			OF STRAINS AND FALLS - OBSERVE FOR			
			SLIPPING / TRIPPING HAZARDS.			
		3c. SHARP EDGES ON RACKS	3c. WEAR GLOVES. WATCH HAND			
		(LACERATIONS TO HANDS	PLACEMENT.			
		& FINGERS)				
4. RETURN TRUCK TO		4. SAME AS STEP 2	4. SAME AS STEP 2 EXCEPT			
CONVEYOR AREA.		EXCEPT THERE ARE	THERE ARE NO ACTIONS OR			
		NO HAZARDS RELATED	PROCEDURES RELATED			
		TO THE LOAD.	TO THE LOAD.			

JOB SAFETY ANALYSIS

INSTRUCTIONS ON REVERSE SIDE

JOB TITLE (and number if applicable):

Banding Pallets

PAGE 1 OF 2 JSA NO. 105

DATE:

1/1/95

☒ REVISED

TITLE OF PERSON WHO DOES JOB:

Bander

SUPERVISOR:

James Smith

ANALYSIS BY:

James Smith

COMPANY/ORGANIZATION:

Metal Fabricating Corp.

PLANT/LOCATION:

Chicago

DEPARTMENT:

Packaging

REVIEWED BY:

John Martin

REQUIRED AND/OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT:

Gloves - Eye Protection - Long Sleeves - Safety Shoes

APPROVED BY:

Joe Bottom

SEQUENCE OF BASIC JOB STEPS

POTENTIAL HAZARDS

RECOMMENDED ACTION OR PROCEDURE

1. Position portable banding cart and place strapping guard on top of boxes.

1. Cart positioned too close to pallet (strike body & legs against cart or pallet, drop strapping gun on foot.)

1. Leave ample space between cart and pallet to feed strapping - have firm grip on strapping gun.

2. Withdraw strapping and bend end back about 3".

2. Sharp edges of strapping (cut hands, fingers & arms). Sharp corners on pallet (strike feet against corners).

2. Wear gloves, eye protection & long sleeves - keep firm grip on strapping - hold end between thumb & forefinger - watch where stepping.

3. Walk around load while holding strapping with one hand.

3. Projecting sharp corners on pallet (strike feet on corners).

3. Assure a clear path between pallet and cart - pull smoothly - avoid jerking strapping.

4. Pull and feed strap under pallet.

4. Splinters on pallet (punctures to hands and fingers) Sharp strap edges (cuts to hands, fingers, and arms).

4. Wear gloves - eye protection - long sleeves. Point strap in direction of bend - pull strap smoothly to avoid jerks.

5. Walk around load. Stoop down. Bend over, grab strap, pull up to machine, straighten out strap end.

5. Protruding corners of pallet, splinters (punctures to feet and ankles).

5. Assure a clear path - watch where walking - face direction in which walking.

6. Insert, position and tighten strap in gun.

6. Springy and sharp strapping (strike against with hands and fingers).

6. Keep firm grasp on strap and on gun - make sure clip is positioned properly.

[illegible]



☒ W ☐ REVISED

PAGE ____ OF ____ JSA NO. ____

DATE:

TITLE OF PERSON WHO DOES JOB:

SUPERVISOR:

ANALYSIS BY:

INSTRUCTIONS ON REVERSE SIDE

COMPANY/ORGANIZATION:

PLANT/LOCATION:

DEPARTMENT:

REVIEWED BY:

REQUIRED AND/OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT:

SEQUENCE OF BASIC JOB STEPS

POTENTIAL HAZARDS

RECOMMENDED ACTION OR PROCEDURE

INSTRUCTIONS FOR COMPLETING THE JOB SAFETY ANALYSIS FORM

Job Safety Analysis (JSA) is an important accident prevention tool that works by finding hazards and eliminating or minimizing them *before* the job is performed, and *before* they have a chance to become accidents. Use JSA for job clarification and hazard awareness, as a guide in new employee training, for periodic contacts and for retraining of senior employees, as a refresher on jobs which run infrequently, as an accident investigation tool, and for informing employees of specific job hazards and protective measures.

Set priorities for doing JSA's: jobs that have a history of many accidents, jobs that have produced disabling injuries, jobs with high potential for disabling injury or death, and new jobs with no accident history.

Select a job to be analyzed. Before filling out this form, consider the following: The purpose of the job—What has to be done? Who has to do it? The activities involved—How is it done? When is it done? Where is it done?

In summary, to complete this form you should consider the purpose of the job, the activities it involves, and the hazards it presents. If you are not familiar with a particular job or operation, interview an employee who is. In addition, observing an employee performing the job, or "walking through" the operation step by step may give additional insight into potential hazards. You may also wish to videotape the job and analyze it.

Here's how to do each of the three parts of a Job Safety Analysis:

SEQUENCE OF BASIC JOB STEPS

Examining a specific job by breaking it down into a series of steps or tasks, will enable you to discover potential hazards employees may encounter.

Each job or operation will consist of a set of steps or tasks. For example, the job might be to move a box from a conveyor in the receiving area to a shelf in the storage area. To determine where a step begins or ends, look for a change of activity, change in direction or movement.

Picking up the box from the conveyor and placing it on a handtruck is one step. The next step might be to push the loaded handtruck to the storage area (a change in activity). Moving the boxes from the truck and placing them on the shelf is another step. The final step might be returning the handtruck to the receiving area.

Be sure to list *all* the steps needed to perform the job. Some steps may not be performed each time; an example could be checking the casters on the handtruck. However, if that step is generally part of the job it should be listed.

POTENTIAL HAZARDS

A hazard is a potential danger. The purpose of the Job Safety Analysis is to identify ALL hazards—both those produced by the environment or conditions and those connected with the job procedure.

To identify hazards, ask yourself these questions about each step:

Is there a danger of the employee striking against, being struck by, or otherwise making injurious contact with an object?

Can the employee be caught in, by, or between objects?

Is there potential for slipping, tripping, or falling?

Could the employee suffer strains from pushing, pulling, lifting, bending, or twisting?

Is the environment hazardous to safety and/or health (toxic gas, vapor, mist, fumes, dust, heat, or radiation)?

Close observation and knowledge of the job is important. Examine each step carefully to find and identify hazards—the actions, conditions, and possibilities that could lead to an accident. Compiling an accurate and complete list of potential hazards will allow you to develop the recommended safe job procedures needed to prevent accidents.

RECOMMENDED ACTION OR PROCEDURE

Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the hazards that could lead to an accident, injury, or occupational illness.

Begin by trying to: 1) engineer the hazard out; 2) provide guards, safety devices, etc.; 3) provide personal protective equipment; 4) provide job instruction training; 5) maintain good housekeeping; 6) insure good ergonomics (positioning the person in relation to the machine or other elements in such a way as to improve safety).

List the recommended safe operating procedures. Begin with an action word. Say exactly what needs to be done to correct the hazard, such as, "lift using your leg muscles." Avoid general statements such as, "be careful."

List the required or recommended personal protective equipment necessary to perform each step of the job.

Give a recommended action or procedure for each hazard.

Serious hazards should be corrected immediately. The JSA should then be changed to reflect the new conditions.

Finally, review your input on all three columns for accuracy and completeness. Determine if the recommended actions or procedures have been put in place. Re-evaluate the job safety analysis as necessary.



***National
Safety
Council***

444 North Michigan Avenue
Chicago, Illinois 60611



JOB SAFETY ANALYSIS

**Participant's
Manual**



JOB SAFETY ANALYSIS

Participant's Manual

**For use with videotape,
film or slideshow version**

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INTRODUCTION

It's no secret that accidents mean losses—losses to both the employer and to the employee. Those losses include both human losses and dollar losses. How can these losses be stopped? The best way to prevent losses due to accidents and occupational illness is to develop a solid, working program for accident prevention. Job Safety Analysis has been proven time and again to be an effective accident and occupational illness prevention tool in many industries over the past several years.

What is a Job Safety Analysis? A Job Safety Analysis, also known as JSA, is a simple formula for preventing work accidents and illnesses. JSA is effective because it operates at a very basic level—the specific individual job or work assignment. A Job Safety Analysis is a procedure designed to review job methods, uncover hazards and recommend safe job procedures.

This manual is part of a Job Safety Analysis training program; the program includes an accompanying videotape, film, or slide show.

The objective of the program is to enable you to prepare a Job Safety Analysis as part of an overall accident prevention program. The program is to be conducted as a group workshop, and this manual is to serve as an introduction to Job Safety Analysis as well as an overview of the audio-visual program and a review of the entire training session.

Importance

Job Safety Analysis can make a given job as safe as humanly possible by finding hazards and eliminating or minimizing those hazards *before* the job is performed and *before* those hazards have a chance to become accidents. Safe job procedures are developed to train employees to work properly to prevent accidents which affect themselves and fellow employees. This is accomplished by avoiding physical and environmental hazards that cannot be eliminated.

The development and use of JSA's is of critical importance to a company or organization with a commitment to reducing and preventing accidents and illnesses on the job.

Uses of JSA's

The JSA not only helps supervisors and employees become aware of hazards on the job, it has many other uses as well. A JSA may be used to determine specific training an employee has received, as a basis for inspection, as an informational tool for accident investigations, and as part of continuing communication program on employee safety and health awareness.

JSA is especially helpful as a training tool, because the program provides an organized system for training both new and existing employees. The completed JSA sheet can be used in Job Instruction Training (JIT). Once a JSA is established, training new employees is a lot easier; the entire job procedure does not have to be redeveloped every time an employee is to be trained or retrained. With the JSA as a guide, you do not have to worry about forgetting to explain some part of the procedure—maybe an important part—to the employee.

The JSA provides a basis for documentation of employee training. You can periodically conduct safety contacts with the worker and observe the worker and use the JSA to show the employee how to do the job correctly. In the event of employee correction problems, the JSA shows what was used to train the employees.

The JSA is equally as important in accident investigation. The JSA may be used as a reference point in case an accident does occur. The actions of the employee are compared to the recommended job actions on the JSA to determine if the employee was performing his job properly according to the JSA. Other important factors to be considered in using the JSA for this purpose are whether the JSA itself was correct and whether any possible hazards were missed when originally developing the JSA which led to the accident in question.

JSA's may also help you learn about the various jobs you supervise. If you have not actually performed a specific job yourself, the JSA can help you learn how to perform that job. Because the JSA indicates what is involved in the job, step-by-step, you can learn in detail about each of the individual jobs you supervise.

The JSA helps in machinery inspection. Because it provides a detailed breakdown of the job—step-by-step—company management, supervisors, and inspectors can see how the machinery actually works in the performance of that job. This assists in inspecting the performance of the machinery itself.

JSA: An On-Going Activity

It's important to remember that the JSA is not a one-time activity—it's a permanent working tool. That means it's a continuing activity or program. JSA's have to be kept current. What can happen if they're not? Well, many of the advantages we have discussed, such as uncovering hazards, employee training, accident investigation, and record keeping, can be lost over a period of time, and the misinformation on an out-of-date JSA can work to everybody's disadvantage.

Keeping JSA's up to date may sound like a lot of extra work, but changes are not actually needed that often. And you will not have to spend all your time working on JSA's. But you *are* going to have to keep on top of them. If a situation, a job environment, or any other change occurs, the change must be reflected on the JSA as quickly as possible. If the JSA is changed or revised, everyone concerned with the job should be informed of the changes and instructed in the new procedures.

When should you review a JSA for possible updating? One example is if an accident occurs on a job covered by a Job Safety Analysis. In that case, review the JSA to decide whether it needs revision. In other words, check the JSA to see if the accident occurred because the JSA was not followed, or if the accident occurred because there was something basically wrong with the job procedure or the analysis, or if a hazard existed that had not previously been recognized or eliminated. The JSA should also be updated whenever the job method or process has changed.

Every job in your organization shares something in common with all other jobs in that organization. They all require people performing at their best level of productivity, producing goods and services in a safe and efficient manner, with maximum economic benefits returned to management and employees alike. Helping do that is what JSA is all about.

AUDIO-VISUAL OVERVIEW PROGRAM

The audio-visual program which accompanies this manual provides an explanation of the JSA. During the program, you are to complete two JSA's.

After selecting a job, the three basic steps in making a job safety analysis are discussed:

- 1) The job is broken down into a sequence of steps.

- 2) The potential hazards involved with each job step are identified.
- 3) Safe job procedures and/or elimination of unsafe conditions are recommended.

The tape (film, slide show) then shows a specific job and develops a job safety analysis—JSA—for that job. The first two steps of developing the JSA are discussed in detail. The third step will be discussed during the workshop.

Following the development of the JSA, a second job is shown, and you are to complete a JSA for this job.

Additional points discussed in the tape (film, slide show) are:

- where completed JSA's should be kept,
- the various uses of JSA's (new employee training, hazard awareness, retraining, accident and occupational illness investigation),
- pitfalls involved in JSA's,
- the need for JSA's to be a continuing program,
- priorities in developing JSA's.

CONTENT REVIEW

JSA: 3 Basic Steps

There are three basic steps in developing the JSA:

- 1) Each job is broken down into a sequence of steps. Each step describes the actions of the job as that job is performed.
- 2) Each step is examined to find and identify hazards; i.e., actions, conditions, possibilities, that could lead to an accident.
- 3) Recommended actions or procedures are determined for each hazard. The JSA becomes a guideline for what actions are necessary to eliminate or minimize the hazards that could lead to an accident or injury.

Key Terms: Hazard, Accident, Injury

Three key terms are important in developing a JSA: hazard, accident, and injury.

A **hazard** is a potential danger. A good example of a hazard would be an oil spill on a floor. As long as that oil spill is there and nobody is around, it's a hazard or a potential danger, and nothing more.

An **accident** is an unintended happening that may result in injury, loss or damage.

But as soon as you put people in the picture, that hazard is very likely to cause an *accident*.

Someone slipping in that oil spill would be an accident.

An **injury** is the *result* of an accident. A sprained wrist or a broken arm from the fall would be an injury.

Another example: A hammer balanced on a windowsill is a hazard. Knocking the hammer off the sill is an accident. If it hits your foot and breaks it, that's an injury.

Look for All Hazards

Don't just look for *obvious* hazards like a pallet leaning against the wall in an aisleway. Look for *all* hazards. Look at the total environment. Some potential hazards are not obvious. Always consider the possibility of debris or other obstructions in aisleways even if there is nothing there at the time the JSA is developed. Or, as is the case in the audio-visual presentation, an unguarded piece of machinery is near, but not exactly in the location of the worker. In this instance, if the worker were unloading further down the conveyor line, he could possibly come in contact with the unguarded V-belt. That makes the unguarded V-belt a potential hazard.

Recommended Actions

There are three basic actions which are usually taken first to correct a hazard. They are, in order of preference:

- 1) Engineering the hazard out of the operation.
- 2) Provide guards to protect the worker from the hazard.
- 3) Provide personal protective equipment; i.e., eye or foot protection, aprons, gloves, face shields, welder's helmets.

Equally important are:

- 1) Job instruction training:
- 2) Good housekeeping:
- 3) Good ergonomics:

Additional actions may include the following:

- Do the job a different way.
- Reduce the frequency with which the job is done.
- Change the environment by removing hazardous materials or opening up the workplace.
- Eliminate the job completely.
- Having specialists perform that one operation or procedure.

Health Hazards

The JSA can be an effective means of uncovering *health* hazards in a job operation.

The job procedure could be contributing to a medical problem that might not become known for a long time. Examples are things like deterioration of the lower back, loss of hearing or loss of sight, or some other occupational disease.

These health problems are not as visible or as dramatic

as accidents because they usually don't happen all of a sudden. Nevertheless, they are extremely costly to the company and a serious detriment to employee health.

The establishment of a good JSA program may help uncover these problems well before they become serious health hazards.

Many health hazards have to be assessed through measurements by an industrial hygienist or other qualified individual. If a potential health hazard exists, it's important to determine the actual situation so appropriate steps can be taken to eliminate or control the hazard.

Ergonomics

Ergonomics is the science of designing the job and the workplace to fit the worker. The goal of ergonomics is to allow work to be done without undue stress.

The JSA will identify worker position(s), tool usage, loads, lifting, repetitive motion, etc., that quite likely affect the employee's job and performance.

If the relationship between the employee and the job induces stress, a more detail analysis should be performed, to better identify these existing and/or potential problems.

Where Should JSA's be Kept?

A copy of the JSA should be kept on the job so it will be handy for ready reference. They should also be maintained in the supervisor's office and may be posted on department bulletin boards.

Possible Pitfalls

There are three significant pitfalls in developing JSA's. They could keep the JSA's from being as effective as they might otherwise be.

- 1) Not listing all hazards.
- 2) Listing hazards but taking no action.
- 3) Listing non-specific action recommendations. You must specify *exactly* what is to be done to correct the hazard.

JSA Priorities

The long-range objective for JSA's should be to develop them for all jobs. However, it is very important to set priorities for developing JSA's, especially when beginning a JSA program. The most important priorities are:

- 1) Job accident frequency: Those jobs that have involved a lot of accidents, whether or not injury or occupational illness resulted. The more accidents, the greater the reason for the JSA.

- 2) Job injury and occupational illness severity: Those jobs that have involved disabling injuries or occupational illnesses (lost work or restricted work) over those with only minor injuries. If a number of serious injuries have occurred, there is probably a basic problem with the environment or how the job is being done.
- 3) Potential injury/illness severity: Those with the *potential* for serious injury/illness or death—even if no such accidents have happened yet.
- 4) New jobs: These have no accident history and the potential for accidents and/or occupational illness may not be recognized. The JSA discovers potential hazards, eliminates hazards, and establishes safe job procedures before any accidents can occur.
- 5) Cost: The cost of the accident on a job is also a consideration. If 20% of the accidents cause 80% of the cost, those 20% may warrant a JSA program.

Maintenance Jobs

It may be impractical to do JSA's for the hundreds—or thousands—of maintenance jobs. But JSA's should be done for:

- 1) Repetitive maintenance jobs like changing a crane cable.
- 2) Basic tool and equipment usage jobs like using a cutting torch.
- 3) Infrequently performed maintenance jobs that are extremely hazardous or have a history of accidents.

JSA's Developed in the Audio-Visual Program.

Included in this manual are completed JSA forms for the jobs shown in the A-V program. You will notice that accidents and/or possible injuries are included in parentheses following the potential hazards. You may find it easier to identify these possible accidents and injuries along with the potential hazards. However, remember, the emphasis is on potential *hazards*. If you focus on the accident or injury, you may not understand the full scope of the problem—the potential hazard—and you may fail to take the appropriate action.

The JSA: An Important Safety Factor

JSA's will help reduce accidents and occupational illnesses and increase efficiency. They result in cost reductions, may help find a better way to do a job, and serve to document employee training. They are important tools in the overall safety program.

QUIZ

1. List the three major steps in completing the JSA.

- (a) _____
- (b) _____
- (c) _____

2. Identify each of the following phrases as either an:

(a) accident

(b) hazard

(c) injury

Place the correct letter in the space provided before each phrase:

- | | |
|--------------------------|-------------------------|
| _____ fall on the floor | _____ blind corner |
| _____ nip point on rolls | _____ strained shoulder |
| _____ sprained ankle | _____ low overhead |
| _____ cut finger | _____ cracked ladder |
| _____ caught in gears | _____ fractured finger |

3. Name four priorities for developing JSA's.

4. A JSA assists in which of the following? (More than one response may be correct.)

- | | |
|----------------------------------------------------------------|----------------------------------------------------------------|
| (a) employee training | (d) accident investigation |
| (b) identifying hazards | (e) machinery inspection |
| (c) eliminating all hazards so that
no accidents will occur | (f) documents training which can
lead to corrective action. |

5. What maintenance jobs generally should be included in the JSA program?

- (a) all maintenance jobs
- (b) basic tool jobs, repetitive jobs and hazardous jobs
- (c) only those which are hazardous
- (d) repetitive jobs and hazardous jobs
- (e) only those done every day

Mark the following statements true or false:

- _____ 6. Job Safety Analysis is a one-time function.
- _____ 7. The first step in doing any JSA is to look for possible injuries.
- _____ 8. JSA's are useful in documenting employee training.
- _____ 9. The last step in development of the JSA is recommending safe job procedures.
- _____ 10. Listing too many hazards is one pitfall in developing a JSA.
- _____ 11. A basic job step is a logical series of movements on-the-job.
- _____ 12. The more accidents on a specific job, the greater the need for the JSA.
- _____ 13. After hazards have been identified on the JSA form, the next most important step is to list all of the personal protective equipment for the job.
- _____ 14. The words "be careful" would be a good way to start writing a recommended action.
- _____ 15. Job steps should begin with an action word, (i.e. lift, push, pull)

16. List three possible pitfalls in JSA development:

- (a) _____
- (b) _____
- (c) _____

17. List three general approaches to consider for recommended action:

- (a) _____
- (b) _____
- (c) _____

18. What is the best benefit from a JSA program?



National Safety Council
JOB SAFETY ANALYSIS

INSTRUCTIONS ON REVERSE SIDE

JOB TITLE (and number if applicable):

PAGE ____ OF ____ JSA NO. ____

DATE:

NEW
REVISED

TITLE OF PERSON WHO DOES JOB:

LOADER

SUPERVISOR:

ANALYSIS BY:

COMPANY/ORGANIZATION:

PLANT/LOCATION:

DEPARTMENT:

REVIEWED BY:

REQUIRED AND/OR RECOMMENDED
PERSONAL PROTECTIVE EQUIPMENT:

APPROVED BY:

SEQUENCE OF BASIC JOB STEPS

POTENTIAL HAZARDS

RECOMMENDED ACTION OR PROCEDURE



National Safety Council
JOB SAFETY ANALYSIS

INSTRUCTIONS ON REVERSE SIDE

JOB TITLE (and number if applicable):

PAGE ____ OF ____ JSA NO. ____

DATE:

☐ NEW
☐ REVISED

TITLE OF PERSON WHO DOES JOB:

LOADER

SUPERVISOR:

ANALYSIS BY:

COMPANY/ORGANIZATION:

PLANT/LOCATION:

DEPARTMENT:

REVIEWED BY:

REQUIRED AND/OR RECOMMENDED
PERSONAL PROTECTIVE EQUIPMENT:

APPROVED BY:

SEQUENCE OF BASIC JOB STEPS

POTENTIAL HAZARDS

RECOMMENDED ACTION OR PROCEDURE

8



COMPANY/ORGANIZATION:

SEQUENCE OF BASIC JOB STEPS

PAGE _____ OF _____ JSA NO. _____

NEW
REVISED

SUPERVISOR:

ANALYSIS BY:

PLANT/LOCATION:

DEPARTMENT:

REVIEWED BY:

APPROVED BY:

RECOMMENDED ACTION OR PROCEDURE

[illegible]



National Safety Council
JOB SAFETY ANALYSIS

INSTRUCTIONS ON REVERSE SIDE

JOB TITLE (and number if applicable):

PAGE ____ OF ____ JSA NO. ____

DATE:

☐ NEW
☐ REVISED

TITLE OF PERSON WHO DOES JOB:

BANDER

SUPERVISOR:

ANALYSIS BY:

COMPANY/ORGANIZATION:

PLANT/LOCATION:

DEPARTMENT:

REVIEWED BY:

REQUIRED AND/OR RECOMMENDED
PERSONAL PROTECTIVE EQUIPMENT:

APPROVED BY:

SEQUENCE OF BASIC JOB STEPS

POTENTIAL HAZARDS

RECOMMENDED ACTION OR PROCEDURE



Natic Safety Council
JOB SAFETY ANALYSIS

INSTRUCTIONS ON REVERSE SIDE

JOB TITLE (and number if applicable):

PAGE ____ OF ____ JSA NO. ____

DATE:

☐ NEW
☐ REVISED

TITLE OF PERSON WHO DOES JOB:

BANDER

SUPERVISOR:

ANALYSIS BY:

COMPANY/ORGANIZATION:

PLANT/LOCATION:

DEPARTMENT:

REVIEWED BY:

REQUIRED AND/OR RECOMMENDED
PERSONAL PROTECTIVE EQUIPMENT:

APPROVED BY:

SEQUENCE OF BASIC JOB STEPS

POTENTIAL HAZARDS

RECOMMENDED ACTION OR PROCEDURE



National Safety Council
JOB SAFETY ANALYSIS

INSTRUCTIONS ON REVERSE SIDE

JOB TITLE (and number if applicable):

PAGE ____ OF ____ JSA NO. ____

DATE:

☐ NEW
☐ REVISED

TITLE OF PERSON WHO DOES JOB:

BANDER

SUPERVISOR:

ANALYSIS BY:

COMPANY/ORGANIZATION:

PLANT/LOCATION:

DEPARTMENT:

REVIEWED BY:

REQUIRED AND/OR RECOMMENDED
PERSONAL PROTECTIVE EQUIPMENT:

APPROVED BY:

SEQUENCE OF BASIC JOB STEPS

POTENTIAL HAZARDS

RECOMMENDED ACTION OR PROCEDURE

12



National Safety Council
JOB SAFETY ANALYSIS

INSTRUCTIONS ON REVERSE SIDE

JOB TITLE (and number if applicable):

PAGE ____ OF ____ JSA NO. ____

DATE:

NEW
REVISED

TITLE OF PERSON WHO DOES JOB:

SUPERVISOR:

ANALYSIS BY:

COMPANY/ORGANIZATION:

PLANT/LOCATION:

DEPARTMENT:

REVIEWED BY:

REQUIRED AND/OR RECOMMENDED
PERSONAL PROTECTIVE EQUIPMENT:

APPROVED BY:

SEQUENCE OF BASIC JOB STEPS

POTENTIAL HAZARDS

RECOMMENDED ACTION OR PROCEDURE

INSTRUCTIONS FOR COMPLETING THE JOB SAFETY ANALYSIS FORM

Job Safety Analysis (JSA) is an important accident prevention tool that works by finding hazards and eliminating or minimizing them *before* the job is performed, and *before* they have a chance to become accidents. Use JSA for job clarification and hazard awareness, as a guide in new employee training, for periodic contacts and for retraining of senior employees, as a refresher on jobs which run infrequently, as an accident investigation tool, and for informing employees of specific job hazards and protective measures.

Set priorities for doing JSA's: jobs that have a history of many accidents, jobs that have produced disabling injuries, jobs with high potential for disabling injury or death, and new jobs with no accident history.

Select a job to be analyzed. Before filling out this form, consider the following: The purpose of the job—What has to be done? Who has to do it? The activities involved—How is it done? When is it done? Where is it done?

In summary, to complete this form you should consider the purpose of the job, the activities it involves, and the hazards it presents. If you are not familiar with a particular job or operation, interview an employee who is. In addition, observing an employee performing the job, or "walking through" the operation step by step may give additional insight into potential hazards. You may also wish to videotape the job and analyze it.

Here's how to do each of the three parts of a Job Safety Analysis:

SEQUENCE OF BASIC JOB STEPS

Examining a specific job by breaking it down into a series of steps or tasks, will enable you to discover potential hazards employees may encounter.

Each job or operation will consist of a set of steps or tasks. For example, the job might be to move a box from a conveyor in the receiving area to a shelf in the storage area. To determine where a step begins or ends, look for a change of activity, change in direction or movement.

Picking up the box from the conveyor and placing it on a handtruck is one step. The next step might be to push the loaded handtruck to the storage area (a change in activity). Moving the boxes from the truck and placing them on the shelf is another step. The final step might be returning the handtruck to the receiving area.

Be sure to list *all* the steps needed to perform the job. Some steps may not be performed each time; an example could be checking the casters on the handtruck. However, if that step is generally part of the job it should be listed.

POTENTIAL HAZARDS

A hazard is a potential danger. The purpose of the Job Safety Analysis is to identify ALL hazards—both those produced by the environment or conditions and those connected with the job procedure.

To identify hazards, ask yourself these questions about each step:

Is there a danger of the employee striking against, being struck by, or otherwise making injurious contact with an object?

Can the employee be caught in, by, or between objects?

Is there potential for slipping, tripping, or falling?

Could the employee suffer strains from pushing, pulling, lifting, bending, or twisting?

Is the environment hazardous to safety and/or health (toxic gas, vapor, mist, fumes, dust, heat, or radiation)?

Close observation and knowledge of the job is important. Examine each step carefully to find and identify hazards—the actions, conditions, and possibilities that could lead to an accident. Compiling an accurate and complete list of potential hazards will allow you to develop the recommended safe job procedures needed to prevent accidents.

RECOMMENDED ACTION OR PROCEDURE

Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the hazards that could lead to an accident, injury, or occupational illness.

Begin by trying to: 1) engineer the hazard out; 2) provide guards, safety devices, etc.; 3) provide personal protective equipment; 4) provide job instruction training; 5) maintain good housekeeping; 6) insure good ergonomics (positioning the person in relation to the machine or other elements in such a way as to improve safety).

List the recommended safe operating procedures. Begin with an action word. Say exactly what needs to be done to correct the hazard, such as, "lift using your leg muscles." Avoid general statements such as, "be careful."

List the required or recommended personal protective equipment necessary to perform each step of the job.

Give a recommended action or procedure for each hazard.

Serious hazards should be corrected immediately. The JSA should then be changed to reflect the new conditions.

Finally, review your input on all three columns for accuracy and completeness. Determine if the recommended actions or procedures have been put in place. Re-evaluate the job safety analysis as necessary.



***National
Safety
Council***

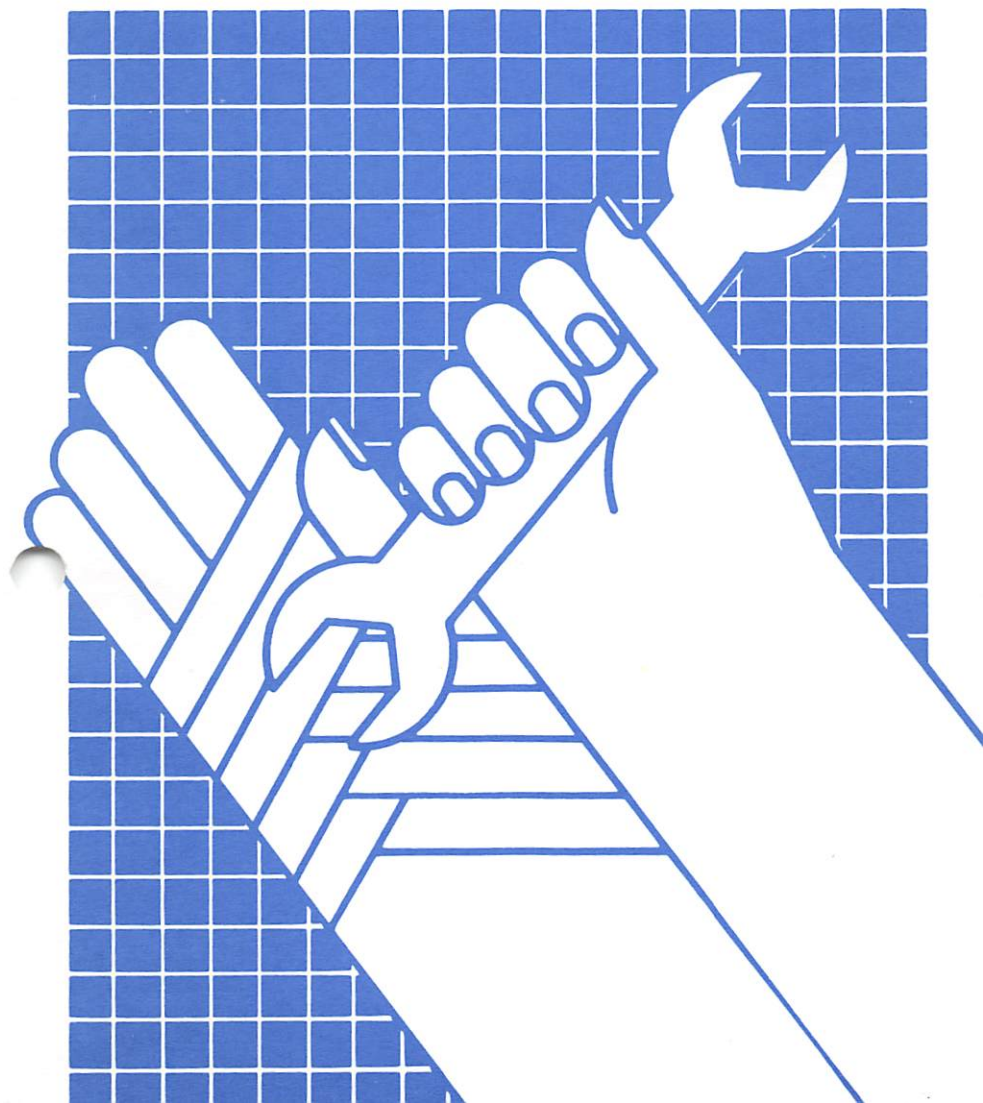
444 North Michigan Avenue
Chicago, Illinois 60611

Job Hazard Analysis



U.S. Department of Labor
Occupational Safety and Health Administration
1988 (Reprint)

OSHA 3071



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Job Hazard Analysis

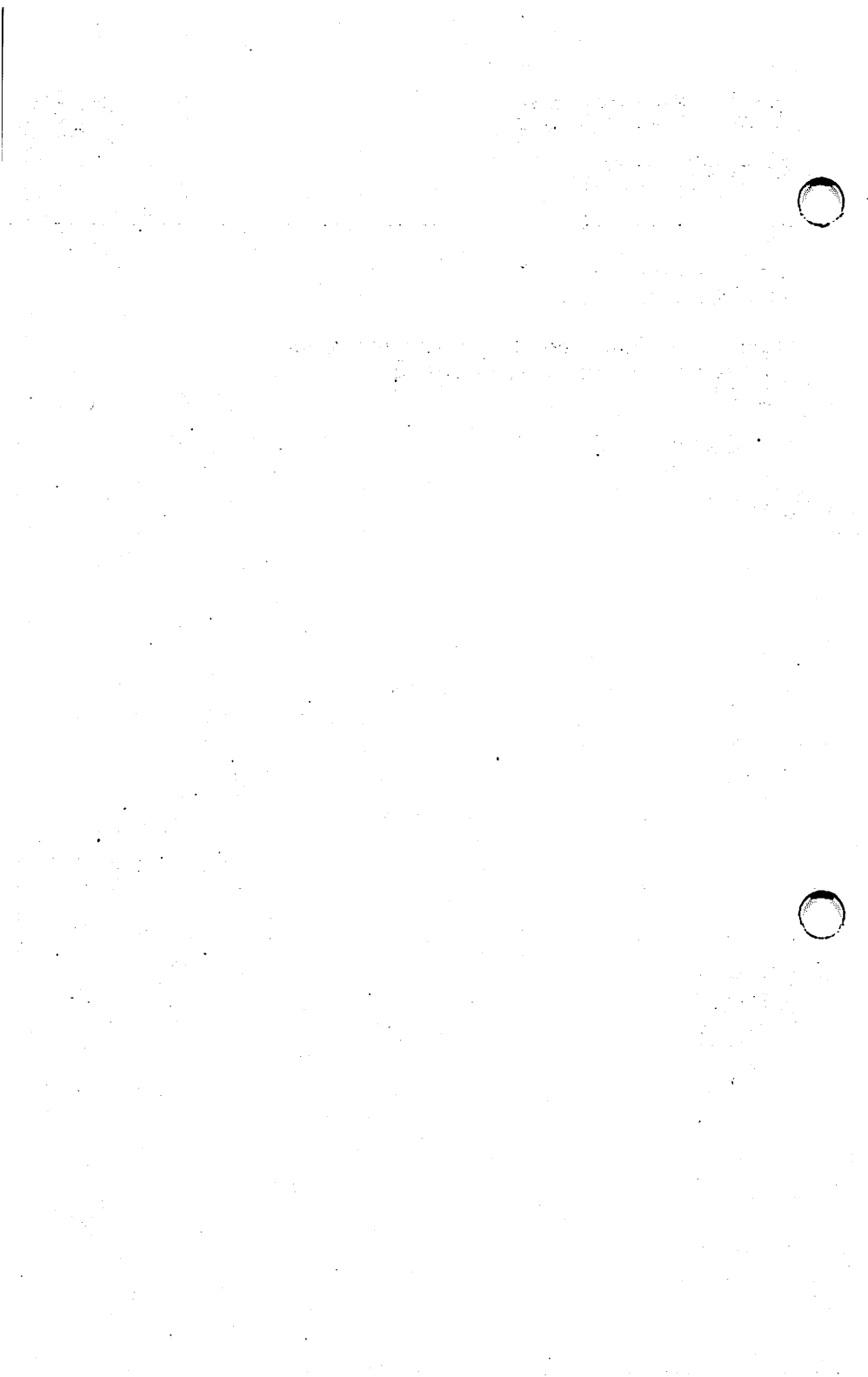


U. S. Department of Labor
Ann McLaughlin, Secretary

Occupational Safety and Health Administration
John A. Pendergrass, Assistant Secretary
1988 (Reprint)

OSHA 3071





Job related injuries occur every day in the workplace. Often these injuries occur because employees are not trained in the proper job procedure.

One way to prevent workplace injuries is to establish proper job procedures and train all employees in safer and more efficient work methods.

Establishing proper job procedures is one of the benefits of conducting a **Job Hazard Analysis** — carefully studying and recording each step of a job, identifying existing or potential job hazards (both safety and health) and determining the best way to perform the job to reduce or eliminate these hazards. Improved job methods can reduce costs resulting from employee absenteeism and workers' compensation, and can often lead to increased productivity.

This booklet explains what a Job Hazard Analysis is and contains guidelines for conducting your own analysis on a step-by-step basis. A sample worksheet is included, showing a completed analysis.

It is important to note that the job procedures in this booklet are for illustration only and do not necessarily include all steps, hazards or protections for similar jobs in industry. In addition, standards issued by the Occupational Safety and Health Administration (OSHA) should be referred to as part of your overall Job Hazard Analysis. There are OSHA standards that apply to most job operations, and compliance with these standards is mandatory.

Although this booklet is designed for use by foremen and supervisors, employees also are encouraged to use the information contained in the booklet to analyze their own jobs, be aware of workplace hazards and report any hazardous conditions to their supervisors.

For additional information on Job Hazard Analysis and job safety and health programs, a list of publications has been included at the back of this booklet.

SELECTING JOBS FOR ANALYSIS

A Job Hazard Analysis can be performed for all jobs in the workplace, whether the job is "special" (non-routine) or routine. Even one-step jobs, such as those in which only a button is pressed, can and perhaps should be analyzed by evaluating surrounding work conditions.

To determine which jobs should be analyzed first, review your job injury and illness reports. Obviously, a Job Hazard Analysis should be conducted first for jobs with the highest rates of accidents and disabling injuries. Also, jobs where "close calls" have occurred should be given priority. Analyses of new jobs and jobs where changes have been made in processes and procedures should follow. Eventually, a Job Hazard Analysis should be conducted and made available to employees for all jobs in the workplace.

INVOLVING THE EMPLOYEE

Once you have selected a job for analysis, discuss the procedure with the employee performing the job and explain its purpose. Point out that you are studying the job itself, not checking up on the employee's job performance. Involve the employee in all phases of the Analysis — from reviewing the job steps to discussing potential hazards and recommended solutions. You also should talk to other workers who have performed the job.

CONDUCTING THE JOB HAZARD ANALYSIS

Before actually beginning the Job Hazard Analysis, take a look at the general conditions under which the job is performed and develop a checklist. Below are some sample questions you might ask.

- Are there materials on the floor that could trip a worker?

- Is lighting adequate?
- Are there any live electrical hazards at the job site?
- Are there any explosive hazards associated with the job or likely to develop?
- Are tools, including hand tools, machines and equipment in need of repair?
- Is there excessive noise in the work area, hindering worker communication?
- Is fire protection equipment readily accessible and have employees been trained to use it?
- Are emergency exits clearly marked?
- Are trucks or motorized vehicles properly equipped with brakes, overhead guards, backup signals, horns, steering gear and identification, as necessary?
- Are all employees operating vehicles and equipment properly trained and authorized?
- Are employees wearing proper personal protective equipment for the jobs they are performing?
- Have any employees complained of headaches, breathing problems, dizziness or strong odors?
- Is ventilation adequate, especially in confined spaces?
- Have tests been made for oxygen deficiency and toxic fumes?

Naturally, this list is by no means complete because each worksite has its own requirements and environmental conditions. You should add your own questions to the list. You might also take photographs of the workplace, if appropriate, for use in making a more detailed analysis of the work environment.

Breaking Down the Job

Nearly every job can be broken down into steps. In the first part of the Job Hazard Analysis, list each step of the job in order of occurrence as you watch the employee performing the job. Be

sure to record enough information to describe each job action, but do not make the breakdown too detailed.

Later, go over the job steps with the employee.

Below is an illustration of a worker performing the basic job steps for grinding iron castings.



Figure 1. Grinding Castings: Job Steps

1. Reach into metal box to right of machine, grasp casting and carry to wheel.
2. Push casting against wheel to grind off burr.
3. Place finished casting in box to left of machine.

Identifying Hazards

After you have recorded the job steps, next examine each step to determine the hazards that exist or that might occur. Ask yourself these kinds of questions:

- Is the worker wearing protective clothing and equipment, including safety belts or harnesses that are appropriate for the job?
- Are work positions, machinery, pits or holes, and hazardous operations adequately guarded?
- Are lockout procedures used for machinery deactivation during maintenance procedures?
- Is the worker wearing clothing or jewelry that could get caught in the machinery?
- Are there fixed objects that may cause injury, such as sharp machine edges?
- Is the flow of work improperly organized (e.g., is the worker required to make movements that are too rapid)?
- Can the worker get caught in or between machine parts?
- Can the worker be injured by reaching over moving machinery parts or materials?

- Is the worker at any time in an off-balance position?
 - Is the worker positioned to the machine in a way that is potentially dangerous?
 - Is the worker required to make movements that could cause hand or foot injuries, or strain from lifting?
 - Can the worker be struck by an object or lean against or strike a machine part or object?
 - Can the worker fall from one level to another?
 - Can the worker be injured from lifting or pulling objects, or from carrying heavy objects?
 - Do environmental hazards — dust, chemicals, radiation, welding rays, heat or excessive noise — result from the performance of the job?
- Repeat the job observation as often as necessary until all hazards have been identified.
- Below is the same illustration of the basic job steps for grinding iron castings, with existing or potential hazards indicated.

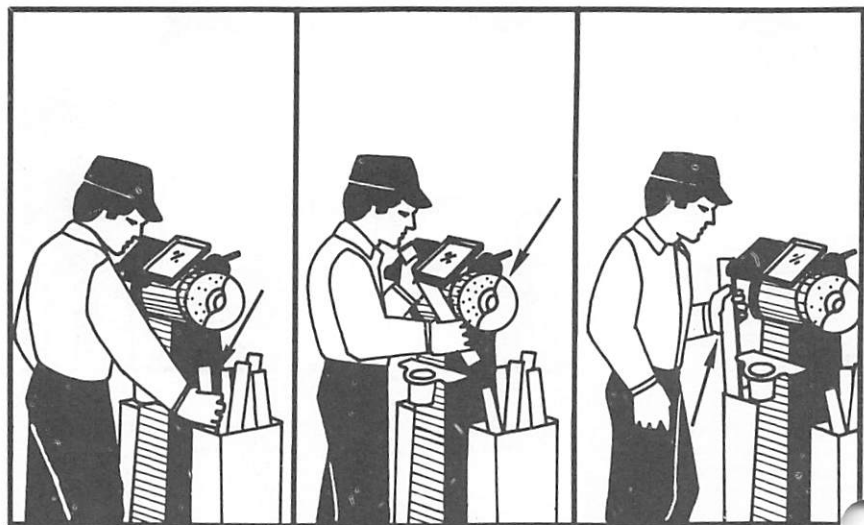


Figure 2. Grinding Castings: Hazards

1. Strike hand on edge of metal box or casting; cut hand on burr. Drop casting on toes.
2. Strike hand against wheel. Flying sparks, dust or chips; wheel breakage. Not enough of wheel guarded. No dust removal system. Sleeves could get caught in machinery.
3. Strike hand against metal box or castings.

Recommending Safe Procedures and Protection

After you have listed each hazard or potential hazard and have reviewed them with the employee performing the

job, determine whether the job could be performed in another way to eliminate the hazards, such as combining steps or changing the sequence, or whether safety equipment and precautions are needed to reduce the hazards.

If safer and better job steps can be used, list each new step, such as describing a new method for disposing of material. List exactly what the worker needs to know in order to perform the new method. Do not make general statements about the procedure, such as "Be careful." Be as specific as you can in your recommendations.

You may wish to set up a training program using the Job Hazard Analysis in order to train your employees in the new procedures, especially if they are working with highly toxic substances or in dangerous situations. (Some OSHA standards *require* that formal training programs be established for employees.)

If no new procedure can be developed, determine whether any

physical changes, such as redesigning equipment, changing tools, adding machine guards, personal protective equipment or ventilation, will eliminate or reduce the danger.

If hazards are still present, try to reduce the necessity for performing the job or the frequency of performing it.

Go over the recommendations with all employees performing the job. Their ideas about the hazards and proposed recommendations may be valuable. Be sure that they understand what they are required to do and the reasons for the changes in the job procedure.

Below is the same illustration of the basic job steps for grinding iron castings, with recommendations for new steps and protective measures.



Figure 3. Grinding Castings: New Procedure or Protection

1. Provide gloves and safety shoes.
2. Provide larger guard over wheel. Install local exhaust system. Provide safety goggles. Instruct worker to wear short or tight-fitting sleeves.
3. Provide for removal of completed stock.

Revising the Job Hazard Analysis

A Job Hazard Analysis can do much toward reducing accidents and injuries in the workplace, but it is only effective if it is reviewed and updated periodically. Even if no changes have been made in a job, hazards that were missed in an earlier analysis could be detected.

If an accident or injury occurs on a specific job, the Job Hazard Analysis should be reviewed immediately to determine whether changes are needed in the job procedure. In addition, if an accident has resulted from an employee's failure to follow job procedures, this should be discussed with all employees performing the job.

Any time a Job Hazard Analysis is revised, training in the new job methods or protective measures should be provided to all employees affected by the changes. A Job Hazard Analysis also can be used to train effectively new employees on job steps and job hazards.

To show how a Job Hazard Analysis form is prepared, a sample worksheet for cleaning the inside of a chemical mix tank is given below. Both safety and health hazards are noted, as well as recommendations for safer methods and protection.

FOR MORE INFORMATION...

The following publications provide more information on conducting a Job Hazard Analysis and complying with OSHA standards.

The Occupational Safety and Health Act of 1970, PL-91-956 (OSHA 2001) December 1970. Cost: 35¢. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Order No. 022-003-99902-7.

Training Requirements of OSHA Standards and Training Guidelines, 1987 (OSHA 2254). Available free from OSHA Office of Publications

Distribution, Rm. N-3101, Department of Labor, Washington, DC 20210.

Accident Prevention Manual and Fundamental Concepts of Industrial Hygiene. Available from the National Safety Council. For information on ordering these two publications, write to the National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611.

The Occupational Safety and Health Subscription Service. This service provides standards, interpretations, regulations and procedures in loose-leaf form. Individual volumes are available from the Government Printing Office (GPO), Superintendent of Documents. (Order forms can be obtained from the nearest OSHA regional office.)

- | | | |
|------|------------------------------------------------------|---------|
| I. | General Industry Standards and Interpretations | \$97.00 |
| II. | Maritime Standards and Interpretations | 29.00 |
| III. | Construction Standards and Interpretations | 29.00 |
| IV. | Other Regulations and Procedures | 71.00 |
| V. | Field Operations Manual | 28.00 |
| VI. | Industrial Hygiene Field Operations Manual | 38.00 |

The National Institute for Occupational Safety and Health publishes health and safety guides for various trades and industries. For information on these publications, write to Publications Dissemination, National Institute for Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, OH 45226. Safety manuals on various subjects also are available from the Mine Safety and Health Administration, U.S. Department of Labor, Ballston Towers #3, 4015 Wilson Blvd., Arlington, VA 22203.

EMPLOYEE RIGHTS

Employees have the right to complain to their employers, their unions, OSHA or another government agency about workplace safety and health hazards.

Section 11(c) of the Occupational Safety and Health (OSH) Act makes it illegal for employees to be discriminated against for exercising this right and for participating in other job safety and health-related employee activities. These protected activities include:

- Complaining individually or with others directly to management concerning job safety conditions.
- Filing of formal complaints with government agencies such as OSHA or state safety and health agencies, fire departments, etc. (An employee's name can be withheld from the complaint, if so requested.)
- Participating in union committees or other workplace committees concerning safety and/or health matters.
- Testifying before any panel, agency or court of law concerning job hazards.
- Participating in walk-around inspections.
- Filing complaints under section 11(c) and giving evidence in connection with these complaints.

Employees also cannot be punished for refusing a work assignment if they have a reasonable belief that it would put them in real danger of death or serious physical injury, provided that, if possible, they have requested the employer to remove the danger and the employer has refused; and provided that the danger cannot be eliminated quickly enough through normal OSHA enforcement procedures.

If an employee is punished or discriminated against in any way for exercising his or her rights under the OSH Act, the employee should report it to OSHA within 30 days. OSHA will investigate and, if the employee has been illegally punished, OSHA will seek appropriate relief for the employee. If necessary, OSHA will go to court to protect the rights of the employee.

ASSISTANCE FOR EMPLOYERS

In all states, free onsite consultation services are available to help employers identify job safety and health hazards and to recommend solutions.

The information gathered by the consultant, including the employer's identity, is kept confidential and is not made available to OSHA enforcement personnel—with two exceptions. If a consultant observes an imminent danger or serious violations of OSHA standards and the employer fails to correct it within the time period recommended by the consultant, OSHA or the responsible state agency will be notified.

Employers may, on an anonymous basis, contact the nearest OSHA office to find out how to take advantage of the free consultation service, or may write for a copy of ***Consultation Services for the Employer*** (OSHA 3047) from OSHA Office of Publications Distribution, Room N-3101, Department of Labor, Washington, DC 20210.

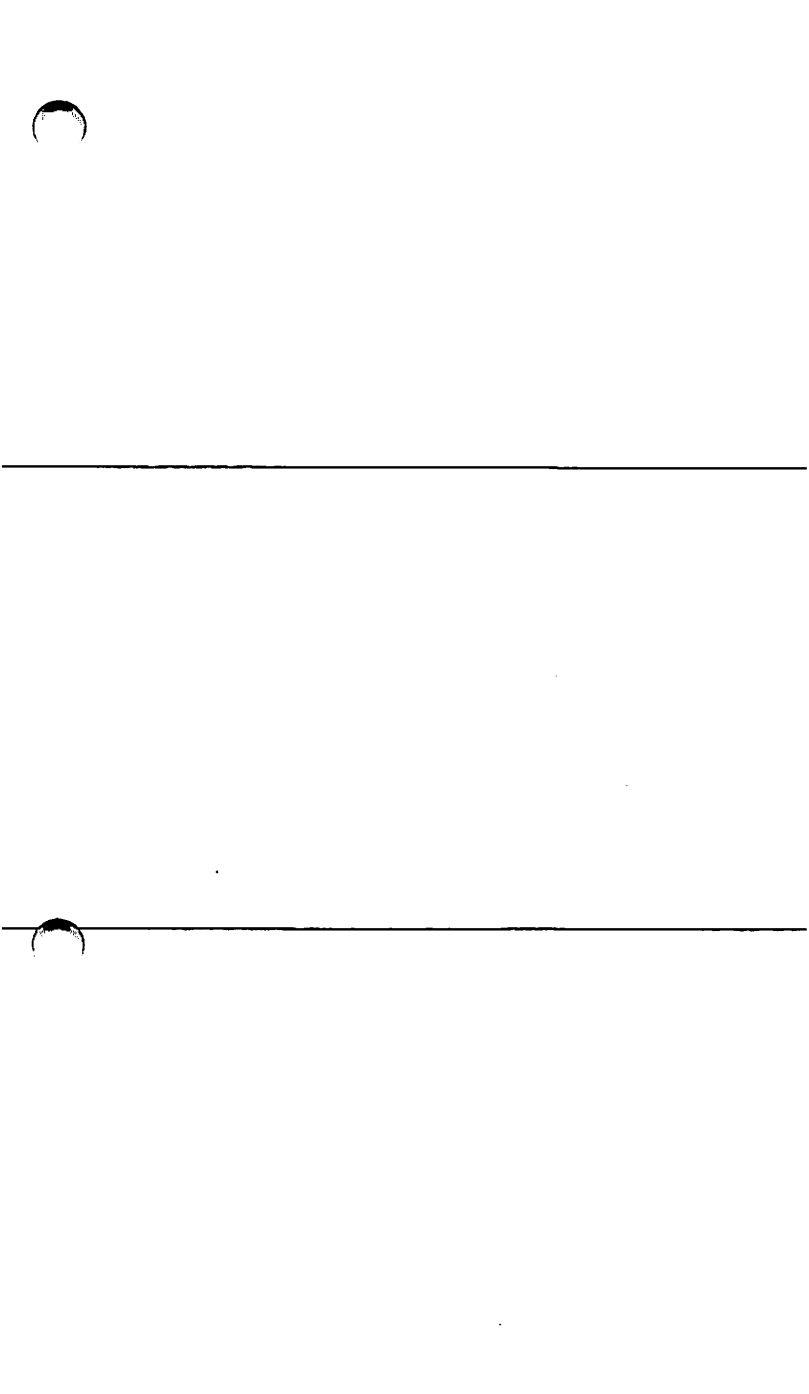
Job Hazard Analysis Form

JOB TITLE:

DATE OF ANALYSIS:

JOB LOCATION:

STEP	HAZARD	NEW PROCEDURE OR PROTECTION
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Sample Job Hazard Analysis

Cleaning Inside Surface of Chemical Tank—Top Manhole Entry

STEP	HAZARD	NEW PROCEDURE OR PROTECTION
1. Select and train operators.	Operator with respiratory or heart problem; other physical limitation.	<ul style="list-style-type: none"> • Examination by industrial physician for suitability to work.
	Untrained operator—failure to perform task.	<ul style="list-style-type: none"> • Train operators. • Dry run. <p>[Reference: National Institute for Occupational Safety and Health (NIOSH) Doc. #80-406]</p>
2. Determine what is in the tank, what process is going on in the tank, and what hazards this can pose.	Explosive gas.	<ul style="list-style-type: none"> • Obtain work permit signed by safety, maintenance and supervisors.
	Improper oxygen level.	<ul style="list-style-type: none"> • Test air by qualified person.
	Chemical exposure— Gas, dust, vapor: irritant toxic Liquid: irritant toxic corrosive: Solid: irritant corrosive	<ul style="list-style-type: none"> • Ventilate to 19.5%-23.5% oxygen and less than 10% LEL of any flammable gas. Steaming inside of tank, flushing and draining, then ventilating, as previously described, may be required. • Provide appropriate respiratory equipment —SCBA or air line respirator. • Provide protective clothing for head, eyes, body and feet. • Provide parachute harness and lifeline. <p>[Reference: OSHA standards 1910.106, 1926.100, 1926.21(b)(6); NIOSH Doc. #80-406]</p>
3. Set up equipment.	Hoses, cord, equipment — tripping hazards.	<ul style="list-style-type: none"> • Tanks should be cleaned from outside, if possible.
	Electrical — voltage too high, exposed conductors	<ul style="list-style-type: none"> • Arrange hoses, cords, lines and equipment in orderly fashion, with room to maneuver safely. • Use ground-fault circuit interrupter.

	Motors not locked out and tagged.	<ul style="list-style-type: none"> • Lockout and tag mixing motor, if present.
4. Install ladder in tank.	Ladder slipping.	
5. Prepare to enter tank.	Gas or liquid in tank.	<ul style="list-style-type: none"> • Secure to manhole top or rig structure. • Empty tank through existing piping. • Review emergency procedures. • Open tank. • Check of job site by industrial hygienist or safety professional. • Install blanks in flanges in piping to tank. (Isolate tank.) • Test atmosphere in tank by qualified person (long probe).
6. Place equipment at tank-entry position.	Trip or fall.	<ul style="list-style-type: none"> • Use mechanical-handling equipment. • Provide guardrails around work positions at tank top.
7. Enter tank.	Ladder — tripping hazard.	<ul style="list-style-type: none"> • Provide personal protective equipment for conditions found. [Reference: NIOSH Doc. #80-406; OSHA CFR 1910.134]
	Exposure to hazardous atmosphere.	<ul style="list-style-type: none"> • Provide outside helper to watch, instruct and guide operator entering tank, with capability to lift operator from tank in emergency.
8. Cleaning tank.	Reaction of chemicals, causing mist or expulsion of air contaminant.	<ul style="list-style-type: none"> • Provide protective clothing and equipment for all operators and helpers. • Provide lighting for tank (Class I, Div. 1). • Provide exhaust ventilation. • Provide air supply to interior of tank. • Frequent monitoring of air in tank. • Replace operator or provide rest periods. • Provide means of communication to get help, if needed. • Provide two-man standby for any emergency.
9. Cleaning up.	Handling of equipment, causing injury.	<ul style="list-style-type: none"> • Dry run. • Use material-handling equipment.

Related Publications

OSHA-2056-All About OSHA

OSHA-3047-Consultation Services for the Employer

OSHA-3080-Hand and Power Tools

OSHA-3088-How to Prepare for Workplace Emergencies

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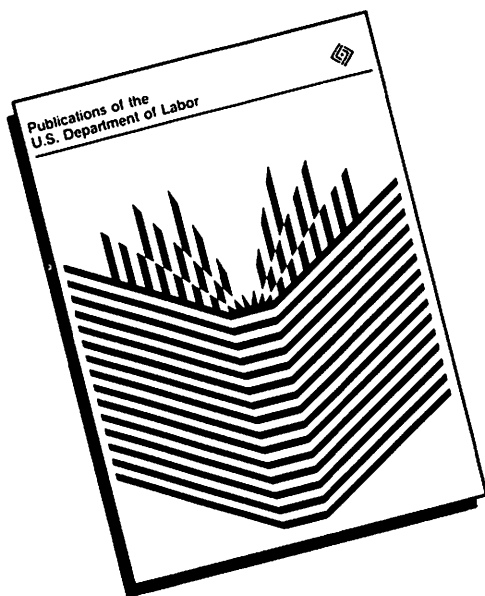
Room 6003

Seattle, WA 98174

Telephone: (206) 442-5930

*These states and territories operate their own OSHA-approved job safety and health programs (the Connecticut and New York plans cover public employees only and OSHA currently is exercising concurrent private-sector Federal enforcement authority in California).

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